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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
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- (88) Date of publication of the international search report:
10 May 2002
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND COMPOSITION FOR AFFECTING REPRODUCTIVE SYSTEMS

(57) Abstract: An immunogenic composition comprising an immunogen derived from a zona pellucida protein, for control of animal reproduction, treatment of reproductive diseases and disorders, and management of animal behavior.

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INTERNATIONAL SEARCH REPORT

International Application No

P. /US 00/18249

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K38/17 A01N37/46 A61P15/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CHEM ABS Data, BIOSIS, WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	WO 00 37100 A (DALHOUSIE UNIVERSITY) 29 June 2000 (2000-06-29) the whole document ---	1-3, 12-14, 16-23, 30-34, 36-38
X	WO 93 25231 A (DALHOUSIE UNIVERSITY) 23 December 1993 (1993-12-23)	1-3, 12-21, 23,30-38
Y	the whole document ---	24,26-28
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"G" document member of the same patent family

Date of the actual completion of the international search

18 January 2001

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25.04.2001

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INTERNATIONAL SEARCH REPORT

International Application No

P. /US 00/18249

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	P. WILLIS ET AL.: "Equine immuncontraception using porcine zona pellucida" J. EQUINE VET. SCI., vol. 14, no. 7, 1994, pages 364-370, XP000978916 the whole document	1-3, 17-20, 30,36,37
Y	--- US 5 656 488 A (CURTISS) 13 August 1997 (1997-08-13) column 2, line 56 -column 3, line 8; example 11	24,26-28
A	--- Y. TAKEUCHI ET AL.: "A 42kd glycoprotein from chicken egg envelope and avian hololog of the ZPC family in mammalian zona pellucida" EUR. J. BIOCHEM., vol. 260, 1999, pages 736-742, XP000978737 the whole document -----	15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/18249

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see further information sheet invention group 1.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3, 12-28 (partially), 30-40

A method for controlling reproduction in an organism, or a method of pest management comprising administering to an organism an immunogenic composition comprising at least one component selected from the group consisting of (a) a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof and (b) a polynucleotide comprising a nucleotide sequence encoding a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof.

2. Claims: 4-9, 12-28 (partially)

A method for treating or preventing a reproductive disorder or disease in an oocyte-producing organism, comprising administering to an organism an immunogenic composition comprising at least one component selected from the group consisting of (a) a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof and (b) a polynucleotide comprising a nucleotide sequence encoding a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof.

3. Claims: 10, 11, 12-28 (partially)

A method for controlling behaviour in an oocyte-producing organism, comprising administering to an organism an immunogenic composition comprising at least one component selected from the group consisting of (a) a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof and (b) a polynucleotide comprising a nucleotide sequence encoding a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof.

4. Claim : 29

A method for affecting the reproductive system of an oocyte-producing organism, comprising administering to an organism an immunogenic composition comprising at least one component selected from the group consisting of (a) a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof and (b) a polynucleotide comprising a nucleotide sequence encoding a polypeptide comprising a zona pellucida protein or an immunogenic fragment thereof.

Patent Family Annex

Information on patent family members

International Application No

PCT/US 00/18249

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0037100	A	29-06-2000	AU 1765300 A	12-07-2000
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